

AMENDED CLAIM SET

1. (Currently Amended) A 1-chip microcomputer, comprising:

register writing control means for determining whether a writing operation occurs in a predetermined address space or in an address space other than the predetermined address space, and outputting a writing reference signal when the writing operation occurs in the predetermined address space;

~~access permission address range setting means for setting, prior to each execution of an application program,~~ an address range within which access by the application program to be executed is permitted only when the writing reference signal is output, such that, said access permission address range setting means ~~is being~~ operable to set said address range only when a software in a predetermined address space is being executed;

judging means for judging whether or not an access is carried out within the address range thus set during execution of the application program;

access permission setting means for setting whether or not an access with respect to an address outside of the address range should be permitted, said access permission setting means being operable to set said access only when the software in the predetermined address space is being executed; and

control means for controlling an access of the application program to a memory based on a result of the judging means and permission set by the access permission setting means.

2. (Currently Amended) A 1-chip microcomputer, comprising:

a monitor flag for toggling a flag, indicating that a predetermined address space is being accessed, based on an address bus signal and an instruction read out signal indicative of a first cycle of an instruction;

an access permission address range setting register operable to set, when said flag is toggled, an address range within which an access is permitted;

judging means for judging whether or not an access is carried out within the address range thus set during execution of a software;

an access permission setting register operable to set, when said flag is toggled, a permission for accessing outside the address range; and

control means for controlling an access with respect to a memory based on a result of the judging means and permission set by the access permission setting register.

3. (Previously Presented) The 1-chip microcomputer as set forth in claim 2, wherein:

a system software is stored in the predetermined address space, and

the system software sets (a) the access permission address range setting register so as to have an address range in which a next program to be executed is stored prior to execution of the next program and (b) the access permission register so as not to permit the access with respect to the address other than the address range.

4. (Previously Presented) The 1-chip microcomputer as set forth in claim 2, further comprising:

interruption request signal generating means for generating an interruption request signal to a CPU when the access permission setting register is set so as not to permit access to the address other than the address range and the judging means judges that the address other than the address range has been accessed, in which a predetermined interruption proceeding program is executed.

5. (Previously Presented) The 1-chip microcomputer as set forth in claim 3, further comprising:

interruption request signal generating means for generating an interruption request signal to a CPU when the access permission setting register is set so as not to permit access to the address other than the address range and the judging means judges that the address other than the address range has been accessed, in which a predetermined interruption proceeding program is executed.

6. (Previously Presented) The 1-chip microcomputer as set forth in claim 4, wherein the interruption proceeding program hands over control to one of a system program and an operating system.

7. (Previously Presented) The 1-chip microcomputer as set forth in claim 5, wherein the interruption proceeding program hands over control to one of a system program and an operating system.

8. (Previously Presented) The 1-chip microcomputer as set forth in claim 3, further comprising:

re-execution forbidding information memory means for storing information indicating that an access is carried out beyond an access limit,

wherein the control means controls the memory based on the information, such that the access is not carried out again beyond the access limit.

9. (original) The 1-chip microcomputer as set forth in claim 1, wherein the memory is a nonvolatile memory that is rewritable.

10. (Original) The 1-chip microcomputer as set forth in claim 2, wherein the memory is a nonvolatile memory that is rewritable.

11. (Original) The 1-chip microcomputer as set forth in claim 3, wherein the memory is a nonvolatile memory that is rewritable.

12. (Original) The 1-chip microcomputer as set forth in claim 4, wherein the memory is a nonvolatile memory that is rewritable.

13. (Original) The 1-chip microcomputer as set forth in claim 5, wherein the memory is a nonvolatile memory that is rewritable.

14. (Original) The 1-chip microcomputer as set forth in claim 6, wherein the memory is a nonvolatile memory that is rewritable.

15. (Original) The 1-chip microcomputer as set forth in claim 7, wherein the memory is a nonvolatile memory that is rewritable.

16. (Original) The 1-chip microcomputer as set forth in claim 8, wherein the memory is a nonvolatile memory that is rewritable.

17. (Currently Amended) An IC card that uses a 1-chip microcomputer, said 1-chip microcomputer comprising:

register writing control means for determining whether a writing operation occurs in a predetermined address space or in an address space other than the predetermined address space, and outputting a writing reference signal when the writing operation occurs in the predetermined address space;

access permission address range setting means for setting, ~~prior to each execution of an application program~~, an address range within which access by the application program to be executed is permitted only when the writing reference signal is output, such that, said access permission address range setting means ~~is being~~ operable to set said address range only when a software in a predetermined address space is being executed;

judging means for judging whether or not an access is carried out within the address range thus set during execution of the application program;

access permission setting means for setting whether or not an access with respect to an address outside of the address range should be permitted, said access permission setting means being operable to set said access only when the software in the predetermined address space is being executed; and

control means for controlling an access of the application program to a memory based on a result of the judging means and permission set by the access permission setting means.

18. (Currently Amended) An IC card that uses a 1-chip microcomputer, said 1-chip microcomputer comprising:

a monitor flag for toggling a flag, indicating that a predetermined address space is being accessed, based on an address bus signal and an instruction read out signal indicative of a first cycle of an instruction;

an access permission address range setting register operable to set, when said flag is toggled, an address range within which an access is permitted;

judging means for judging whether or not an access is carried out within the address range thus set during execution of a software;

an access permission setting register operable to set, when said flag is toggled, a permission for accessing an address outside the address range; and

control means for controlling an access with respect to a memory based on a result of the judging means and permission set by the access permission setting register.

19. (Previously Presented) The IC card as set forth in claim 18, wherein:  
a system software is stored in the predetermined address space, and  
the system software sets (a) the access permission address range setting register so as to have an address range in which a next program to be executed is stored prior to execution of the next program and (b) the access permission register so as not to permit the access with respect to the address other than the address range.

20. (Previously Presented) The IC card as set forth in claim 19, further comprising:

interruption request signal generating means for generating an interruption request signal to a CPU when the access permission setting register is set so as not to permit access to the address other than the address range and the judging means judges that the address other than the address range has been accessed, in which a predetermined interruption proceeding program is executed.

21. (Previously Presented) The IC card as set forth in claim 20, wherein the interruption proceeding program hands over control to one of a system program and an operating system.

22. (Previously Presented) The IC card as set forth in claim 19, further comprising:

re-execution forbidding information memory means for storing information indicating that an access is carried out beyond an access limit,

wherein the control means controls the memory based on the information such that the access is not carried out again beyond the access limit.